GUK - [illegible]
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2 July 1958

MEMORANDUM FOR THE RECORD

SUBJECT: Trip Report -- 25 June 1958 - 27 June 1958

1. 25 June 1958 -- Ramo-Wooldridge

I discussed a number of items with [redacted] of Ramo-Wooldridge 25X1A
at Los Angeles. These were:

a. A brief review of the latest estimate of Soviet capabilities.

b. The concept of a supersonic aircraft configuration to expedite [redacted] work. 25X1A

c. Modification of current turbo-jet type engines for optimization at high altitude and high speed.

d. Strategy for a new approach to C. L. Johnson.

With respect to Item b, Al had not had an opportunity to look further into the problems associated with using the plastic structures at high temperature. We discussed the possibilities of using pressurized structure as in the Titan missile in order to obtain structural efficiency sufficiently high to permit the carrying of adequate fuel for the required range while retaining the advantages of low structural weight. The pressurized structure could be of metal and/or plastic materials and the apparently more appropriate design philosophy would be to design a sufficient rigidity into the structure to maintain its appropriate shape and to utilize internal pressure to provide the additional rigidity to counteract flight air loads.

With respect to Item c, we reviewed a number of currently available and developmental turbo-jet engine characteristics. Al stated that he did not believe that the engine manufacturers are fully utilizing the latest developments of NACA. These are the use of ceramic and other coatings and/or hollow turbine blades for cooling purposes. This allows in the laboratory

a. The planning and conduct of a test program to determine the applicability of the Owens-Corning product.

b. The investigation of a possible Hi S laminate competitor to the Owens-Corning product, 25X1A9a

c. Specific applications of one or another of the plastic materials to the GUSTO program (incidentally, [redacted] is quite confident that we can successfully utilize plastics at the temperatures incurred in high speed flight, perhaps up to mach 3), and

d. Investigation of the use of plastic materials in pressurized structures as suggested [redacted]. 25X1A9a

3. 25 June 1958 -- Lockheed Aircraft Corporation

Went to see C. L. Johnson at Burbank. We discussed, again, the latest estimates of Soviet capabilities and then Kelly explained the direction taken by his activities since visiting here in mid-May. As agreed, he has pursued two lines, (a) the supersonic aircraft with which he is greatly enamoured and (b) the subsonic machine to expedite the [redacted] 25X1A work.

The supersonic version has now grown to approximately 100,000 pounds gross weight, 41,000 pounds empty. This is an unexpectedly high structure efficiency. The aircraft is still intended to cruise at mach 3 with afterburning over the full 4,000 mile range. The airplane could be built of titanium or stainless steel. Its operational altitudes would be in the neighborhood of 87,000 to 92,000 feet. The aircraft is still intended to be powered by two J-58s which burn in the order of 2 pounds of fuel per pound of thrust per hour in the high speed after-burning cruise configuration.

The second machine is a moderately swept-back wing of metal or plastic structure. The aircraft can be made to balance and to approximate U-2 performance aerodynamically. The major undesirable feature of this machine is the inability to reduce its electronic properties to the commands of [redacted] 25X1A Lockheed has done a tremendous amount of model building and radar test work in addition to their multitudinous efforts in aircraft design. The characteristics of the latest subsonic GUSTO vehicle are approximated by the following:

Aspect	Equivalent Square Meters Radar Reflective Area at 225 mc
Dead Ahead	[redacted]
Wing leading edge	
Wing tip	
Dead Astern	

25X1D

Kelly was not at all optimistic re either the design of an engine only for the high altitude high mach performance or the clobbering up of an existing engine along the lines discussed in previous pages of this note. He stated that he thought P & W was utilizing the latest state of the art in turbo-jet technology and that often times NACA, while able to do wonderful things in the laboratory, will leave relatively long development application periods before their inventions appear in service engines. I think this matter of the exploitation of engine technology merits personal investigation since the J-58 operates at a turbine inlet temperature of 1850°. If this could be raised the engine's specific fuel consumption could be considerably improved and perhaps the after-burner eliminated. We batted around the engineering problems and the political aspects of the problem so as not to dampen Kelly's enthusiasm and yet overcome the undesirable features of his supersonic machine. He expressed an interest in trying to combine supersonic speed with the electrical properties of [redacted] configuration which was something he had not attempted to do previously. He promised to give us a progress report on the two approaches he has tried plus the outlook for this third as yet untried approach by 14 or 15 July.

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4. 25 June 1958 -- Rycon

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This was a get-acquainted tour and an opportunity to see [redacted] and his folk.

5. 26 June 1958 -- Rand Corporation

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The main purpose in visiting Rand was defeated since [redacted] had gone by the time I arrived, after the close of business. I did talk to [redacted] who worked with us some years ago in the Air Force and since that time has been devoting his attention to a study of the management of R & D in the Air Force. He has published an article summarizing his findings in the May issue of "Fortune" magazine. (There is also an unsimonized version in Rand Document P-1267 which I would like Mr. Bissell to read at his convenience).

In relation to the possibility of looking over the way in which R & D is managed within CIA at some time in the future, it might be

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worthwhile to consider the use of [redacted] for some months because of his inherent intelligence and detailed acquaintance with Air Force R & D procedures. This subject has not been broached to him, however, he, I know, would be quite interested in a 6 - 12 month sabbatical leave from Ramo.

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6. 27 June 1958 -- [redacted] and Muroc Air Force Base

This was a get to know people and find out what's going on type of visit.

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[redacted]

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RPK:eml (2 July 1958)
1 - SA/FD/DCI
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1 - GUS Chrono